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ABSTRACT

The purpose of this paper is to identify and describe background information and possible indicators for future planning of elementary education, as a prerequisite to planning realistic education programs for early childhood and elementary school teachers. Developments considered include population growth, changing cultural characteristics, continued urbanization, changes in governmental relationships, multiple-vocations and increased leisure, and the increasing accumulation of scientific and technical knowledge. An attempt is made to define broad, guideline trends in education, but with the realization that current and past innovations have not been readily accepted by educators. The major trends appear to be 1) educational population growth, including the increasing need for preschool and adult education; 2) educational goals and objectives, with a potential conflict between the technological and humanistic approach; 3) change in educational administration and organization, with pressures for greater centralization, and changes in the role of state departments of education; 4) changes in school organization, methodology, and curricular patterns; and 5) the effects on education of developments in educational technology, media, and materials. Much greater emphasis is predicted on preschool and childhood education, as an extension of the regular curriculum and organization. Related documents are SP 004 156 to SP 004 166. (MBM)

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APPENDIX A

SOCIETAL AND EDUCATIONAL PROJECTIONS

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Introduction

An initial conclusion drawn about societal and educational projections is the need for a broad-based organization, agency, or committee at both the state and national levels to permanently function in the area of future planning.

> ...there should be a center permanently and continuously engaged in the kinds of societal projections and educational extrapolations sought...the process be continuous and that the center be independent of any single state or direct federal sponsorship (7: 59).

The importance of planning for all phases of education has often been stressed, but it appears that the profession conducts this only on special projects or events such as the "year 2000." The need for future planning was stressed by many authors consulted:

> ...FUTURE-planning should not be confused with future PLANNING. ...future PLANNING has been passive, generally linear, and most frequently based on intuitive guesses or estimates as to the nature of tomorrow. FUTURE-planning... is active, conceives of the future as a fan-like spread of many "possibles," and assumes that the nature of our tomorrows can be mediated, even to some extent determined, through systematic conjecture based on analysis and projection of data (10: 372-373).

Not all authors, however, agree that this movement toward planning as a national effort would be successful:

> ...the nature and direction of those changes can only be determined by the people who live in each community, state and in the nation, and, to some extent, by international developments. ...there is so little agreement on many concepts and proposals that limited, if any, progress can be made in many areas (7: ix).

Conversely: "...for in the decisions we make now, in the way we design our environment and thus sketch the lines of constraints, the future is committed (2: 639)." It appears that consideration should be given by the Office of Education, Education Policy Centers, Research and Development Centers, or new agencies to accept both continuation and stimulation of future projections for society and education.

Most writers in the field appear to believe that future projections can be dealt with either by raising questions to be answered as we move forward, or raising alternatives towards which decisions made along the way will direct us. "There do not exist today any reliable methods of prediction or forecasting...the serious effort is devoted...(to) the subtle art of defining alternatives (2: 641)." With this in mind, the

following projections and discussions are approached by stating alternatives which society or education might take within the next decade.

It became obvious early in the preparation of these projections that the time period being discussed was only 10 years in the future. Striking innovations and changes have been made in the past 10 years, and every indication suggests a continuance in the next 10 years. However, we cannot assume that society or educational institutions will be dramatically different in the 80's than at the beginning of the 70's. One of the leading writers in the field of elementary education today indicates.

> ...soberingly less assurance that the revolution now beginning to tear at the edges of schooling will reach to the inner core...the much-heralded pedagogical revolution... not yet enveloped the millions of teachers who make up the working force...teaching is still largely a "telling" procedure, with exchanges being primarily between teacher and child rather than among groups of children..."discovery" and "inquiry"...tend to be used mechanically, if at all. The textbook dominates... (7: 47,50).

> ...there is an assumption...that the task...is to implement a host of educational innovations which already have been amply demonstrated and proved worthy...accompanied by the assumption that federal intervention has created a self-renewing mechanism of supplementary and regional laboratories...I am uneasy with respect to both assumptions (7: 51).

Another active leader in the field states: "A new system of education, designed to be installed in the relatively near future, must be sufficiently flexible to be used by present teachers in present classrooms in available school buildings (3: 29)." Another leader declared: "Very probably (I regret to assume), if one opens the door of a typical 1980 classroom and walks inside, the teacher will be standing up front talking (7: 216)." With this recognition in mind, the ComField Project indicated two of its basic assumptions as:

1. When prospective teachers engage in an educational experience in a way which gives it personal meaning, and when they themselves become independent self-directing learners, they will be likely to create a similar kind of learning experience for the children they teach.

2. There must be a close and continuing relationship in all phases of both the teacher education program and the in-service preparation program between the cooperating public school districts and the colleges and universities and state departments of education involved in the project.

This involvement of various professional groups interested in the preparation of teachers provided direction in the development of these projections. Heavy reliance has been placed upon organized efforts of committees and groups currently investigating future developments of societal and educational institutions. Rather than rely on individual projections and predictions for future development, primary attention has been paid to organizations and agencies such as the Committee on Economic Development, the Commission of the Year 2000 of the American Academy of Arts and Sciences, publications of the Eight-State Project, studies of the Oregon State System of Higher Education's Division of Teaching Research and the Northwest Regional Educational Laboratory. These agencies or organizations have been conducting long-range projects studying possible future developments.

The purpose of this paper is to identify and describe background information and possible indicators for future planning of elementary education. This information is essential if program planning is to reflect the realities of the future. The identification of trends is a prerequisite to planning realistic programs to meet the varying needs of elementary education. Hopefully, this information will provide a significant basis to better plan a teacher education program for present and future roles of early childhood and elementary school teachers.

Societal Projections

Considerable material has been and will be produced on possible trends society might take in the next decade or by the turn of the century. Many projections dealing with economic, political, and social problems of society may ultimately have a direct bearing upon directions society might move within the next ten to twenty years. Potential breakthroughs in heredity and genetic studies in medicine and the biological sciences may change many aspects of today's world.

This discussion assumes: 1) no devastating nuclear war in the future; 2) no economic chaos; and 3) no drastic changes in present forms of government. The development of technology and knowledge is such that effects on the lives of all people within society by the year 2000 may be as impressive as changes occurring during the past decades. This attempt at broad classifications does not include all significant societal changes, however, the following quotation summarizes the topics researched for this project:

> In short, what matters most about the year 2000 are... the kinds of social arrangements that can deal adequately with the problems we shall confront. More and more we are becoming a "communal society" in which the goods and services of the society--those affecting cities, education, medical care, and the environment--will increasingly have to be purchased jointly. Hence, the problem of social choice and individual

values--the question of how to reconcile conflicting individual desires through the political mechanism rather than the market--becomes a potential source of discord. The relation of the individual to bureaucratic structures will be subject to even greater strain. The increasing centralization of government creates a need for new social forms that will allow the citizenry greater participation in making decisions. The growth of a large, educated professional and technical class, with its desire for greater autonomy in work, will force institutions to reorganize the older bureaucratic patterns of hierarchy and detailed specialization. The individual will live longer and face the problem of renewed education and new careers. The family as the source of primordial attachment may become less important for the child, in both his early schooling and his emotional reinforcement. This will be a more mobile and more crowded world, raising problems of privacy and stress. The new densities and "communications overload" may increase the potentiality for irrational outbursts in our society. Finally, there is the growing disjunction between the "culture" and the "social structure." Society becomes more functionally organized, geared to knowledge and the mastery of complex bodies of learning. The culture becomes more hedonistic, permissive, expressive, distrustful of authority and of the purposive, delayed-gratification of a bourgeois, achievement-oriented technological world (2: 645).

Population Growth

There seems to be little difference of opinion among those writing in the field that "...population will continue to expand dramatically ...(7: 2)." Predictions as to the extent of expansion, however, are quite wide-ranging. Factors making accurate predictions difficult include: the education of the world's population, the dissemination of information on birth control, the acceptance of birth control measures by nations and religious organizations, the increase in health services for both the alleviation of the birth defects and incidence of death at birth, and increased longevity of the population. There appears some consensus that by the year 2000, world population will be 6.4 billion to 7.0 billion, and that of the U. S. around 300 to 320 million.

More information on population trends will be available for the United States following the 1970 census, but in a report in 1966 the following material was reported:

> In the most recent projections by the Bureau of Census, the total population of the United States for 1980 is shown as 241 million. This projection is based upon the assumption of a moderate decline from the fertility level of 1962-65... (6: 25).

and

	1950 (actual)	1965 (actual)	1980 (projected)
(U.S.) Population (millions) (6: 9)	152	195	226-Low 245-Middle 279-High

These gross projection figures are of value to indicate trends and problems that will result for the world in relation to its food, education, and social service provisions. United States information as to relationships to geographic divisions and age-level divisions are more pertinent to projections of this study. With reference to the geography differences of population growth, the Eight-State Study publications had the following to say:

> The West has been the fastest growing region since 1950. This is a continuation of the long-term trend maintained for more than a century....From 1950 to 1965, the increase was 62 percent for the Pacific States and 53 percent for the Mountain States; in contrast, the rate for the U. S. as a whole was 28 percent (6: 26).

The same reference presented information regarding divisions of population by age, and potential effects this might have on varying educational levels. These populations figures, coupled with other societal and educational trends pose serious issues to educators in the distribution of finances for the support of public education.

> Between 1965 and 1980, the population 65 years of age and over will increase by some 5 million persons or by 27 percent...for the group 35 to 64 years of age,...will be much smaller, only about 8 percent...an increase of only 5 million...the group 18 to 34 years of age...increase will be 57 percent. ...an increase of almost 24 million persons, just over one-half of the projected 47 million over-all increase in the population...14 to 17 years of age in 1980... increase of almost 17 percent is projected... This is very small compared with the 67 percent...increase during the preceding 15-year period... The major uncertainty for the group 5 to 13 years of age...is, of course, the birth rate during the years 1966 to 1975. The projections assume a moderate decline from the 1962-65 level... Current birth rates are already well below the highs of the late fifties... On the conservative basis of projection used here, an increase of only 4 million or about 11 percent may be expected in the group 5 to 13 years of age (6: 49-50).

There are those, however, who believe the effects of education and the dissemination of information (both social and medical) on birth

control have been underestimated. The serious problem of feeding, clothing, and sheltering the population of the world may have a material effect upon population projections.

> ...we have the feeling, though, that the likely extent of birth control usage from 1980 to 2000 is substantially underestimated today, and consequently that the world's population by the year 2000 will almost certainly be less than the seven billion once commonly predicted, perhaps by a billion or two (4: 114-115).

Cultural Characteristics

Future cultural characteristics have been conceptualized in many ways. Many behavioral scientists have indicated the current direction of American culture as being sensate. The term "sensate" was derived by Pitirim Sorokin and serves as the focus for this discussion of possible future cultural characteristics.

> ...If, for example, a culture is Sensate in art or in systems of truth, it has tended, historically, to be Sensate in systems of government and family as well...the long-term, all-embracing Sensate trend would seem to have expanded from the West and to cover now virtually the entire world. Whether this will continue for the next thirty-three or sixty-six years, or whether it will become Late Sensate, are open questions (4: 43-44).

This is one central theme of a study of the Hudson Institute. The categorization of a sensate culture would be indicated by the following types of words "empirical, this worldly, secular, humanistic, pragmatic, utilitarian, contractual, epicurean, or hedonistic (4: 39)."

The characterization of the Late Sensate period would be typified by the following words "underworldly, protest, revolt, extreme, sensation-seeking, titillating, depraved, faddish, violently novel, exhibitionistic, debased, vulgar, ugly, debunking, nihilistic, pornographic, sarcastic, sadistic (4: 40)."

With the decline of authoritarian control and establishment of standards by church and home, the implication may well be for education to assume more responsibility for teaching attitudes and values.

> ...the breakdowns in religious, ethical, and moral concepts. ...They seem likely to accentuate as men become more able and willing to think for themselves... It is inevitable that the ability to analyze and to think will result in the questioning of ancient formulae..."the search for human identity." All of us are seeking to find ourselves and our role in a society that is marred with poverty, segregation and

dehumanization...the schools have a challenge to aid in self-understanding and improvement of the human condition (9: 4).

Continued Urbanization

There appears to be general agreement in the writings that population trends will continue with the increased emphasis on movement to urban centers. This trend is world-wide.

> Such structures (megalopolises) will be typical of other countries as well...most of the developed world's population, perhaps 80 or 90 percent, will be urbanized by the end of the century (4: 62).

Three immense urban areas have been projected:

> "Boswash" might contain one quarter of the United States' population (perhaps 80 million people)... "Chippits"...which may stretch from Chicago to Pittsburgh ...Detroit, Toledo, Cleveland, Akron, Buffalo, and Rochester...likely to contain more than one-eighth of the United States' population (or upward of forty million people)... "Sansan"...initially from San Diego to Santa Barbara, and ultimately from San Francisco to Santa Barbara, and should contain one-sixteenth or so of the United States' population (perhaps twenty million people) (4: 61).

It is obvious that these megalopolises will not develop totally within the next ten years, but the trend is obviously in this direction as metropolitan and suburban areas both increase in size. Movements towards urban centers have sociological implications, but a consideration of the educational problems is equally crucial. The size of schools, curriculum, implications of underprivileged or deprived children attending these schools in larger numbers, and the transitory nature of the population all are indicators of problems related to urbanization.

One of the considerations for the schools will be simply the preparation of persons to live in a more diverse world shared by 7 billion people:

> ...need a great deal of self-constraint to tolerate their mutual intrusions, to respect their differences of customs and opinion, to value the individual... If the church continues to lose its authority in ethics and morality, where will a new impulse toward a more civilized behavior originate? ...people differ in their tolerance for crowding...these differences are a result of social training, of experience with crowded living (2: 884-885).

> ...problems of intricate and explosive human relations, the flood of population shifts, and a noxious and noisome environment cry out for a "new man" with new insights and approaches to the solution of problems...must have citizens who are able to deal flexibly with problems as they arise and schools to teach them this skill (9: 3).

Changes in Governmental Relationships

With particular reference to the United States, governmental structure is plagued by a multiplicity of overlapping governmental structures often dealing with aspects of the same problems and creating an inability to cooperatively deal with problems. There has been an increasing trend towards elimination of the smaller local government unit, and movement toward wider, regional planning and governmental units. This has affected not only the organization and administration of governmental agencies, but their financing. This is illustrated by the movement towards increasing emphasis on state funds for local areas, and a movement for more federal funds for state-level assistance. This does not necessarily imply that an over-all national organization will develop, but that larger governmental units for concerted planning and organization of projects might develop.

> With the continuation of extensive urbanization and metropolitanization during the next few decades will come increased recognition that our 20th-century technological, economic and demographic units have governmental structures of 18- and 19th-century origin and design. Already there is a discernible trend towards changes in local government units to meet area-wide problems more adequately... It is certain that in the next decade or two, area-wide planning and functional governmental units will emerge at an accelerated pace (6: 42).

This will not be a sudden change, but will evolve over the years in a carefully studied program of consolidation. An example in Oregon is the gradual, continuing reduction of school districts. However, not all people believe that larger governmental units are necessary nor desirable:

> ...our federal system has always been characterized by the cooperative interrelationship of federal, state, and local governments... Intergovernmental cooperation, no matter how patterned or routinized, is not to be confused with governmental centralization... (6: 102).

> ...to 1980 and beyond...all governments will continue to grow--in size, expenditures, and scope of activities... the major growth in government over the next half generation will continue to take place at the state and local levels...

> There will no doubt be changes in the respective roles of different governments and government agencies in specific cases, and new forms of sharing are likely to develop. Regional arrangements are beginning to loom large on the governmental scene... (6: 111-112).
>
> It is also fairly clear that future increases in expenditures for education will have to come from some level above that of the local community (6: 117).

The above reference is to financing of education, but this has implications for financing of all governmental agencies, regardless of their level. These financial implications may also affect traditional concepts of local control, and will affect the control of program development and implementation.

Most writers in the field appear to agree that education will need to find support at a level above the local community, but whether financing can be found at the state level is a concern. Increasing attention is directed towards the Gross National Product of the federal government and methods by which it might be distributed to support various governmental services. One author states: "...can afford to support education out of its GNP... Whether it will adequately support education is another question...will probably be financial crises throughout the later decades of the twentieth century which will be related to obsolete tax systems (12: 24)."

As indicated earlier, potential movements toward more centralized governmental forms will have implications for all social agencies. Careful and consistent planning can provide an orderly study of the possible transition in this direction. With current "tax revolts" it is apparent that serious attention must be given to the means for providing and distributing to support various programs of social improvement society has identified.

Multiple-vocations and Increased Leisure

One pattern that appears to be changing in the United States, if not the world, is a trend toward multiple-vocations for an individual in his working lifetime. A concurrent pattern is enforced leisure time. Volumes have been written about the possible effects of automation and technology in this regard. There seems to be a definite indication in the literature that this trend will increase, and will require attention from society in general, and education in particular. Attention has been devoted in several of the references to potential effects upon the philosophy and value systems of a population which has essentially worked under the "puritan ethic," and the probable effects of decreased emphasis on the goals of success in a career.

> ...the increasing use of technology in agriculture, industry and defense, the demand for unskilled labor has

> sharply diminished and is continuing to drop...yet...between 15 and 20 percent of the population have not acquired sufficient skill and general literacy to qualify for skilled or higher levels of employment (7: 37).
>
> ...automation...suggests a world not only that one cannot foresee, but one in which many learnings the schools have emphasized for generations may no longer be needed (9: 3).
>
> Technological change is producing a third new task, the re-education of those whose jobs have been eliminated by automation or have been greatly changed by the development of new techniques, materials, or devices... Many people now are, and will be, changing occupations during their working career, and many of these changes require education and training to obtain the necessary skills for the new jobs. This potential of changing of vocations instead of pursuing one vocation for a lifetime, has some definite implications for education of the youth (7: 38).

It would appear that the child must have the ability to adapt not only to differing situations, but also to varying careers. This requires the self-acceptance of responsibility for continuing his education throughout his lifetime.

> The education required for occupational competence involves much more than training in specific vocational skills. It begins in early childhood...should emphasize individual flexibility, borad general education, competence in career planning, and in developing more specific skills as needed (7: 44).

This speaks strongly for preparing personnel who possess not only specific, "short-term career" skills, but also possess the more enduring professional competencies enabling an individual to adapt to change.

Increasing Accumulation of Scientific and Technical Knowledge

There appears to be general agreement among consulted resources that the next few decades will see increasing advancements in knowledge and technology. This will likely affect every person and all ways of life. There is an indication this will bring about marked advancements in individual health, living standards, food and materials production and development, transportation, communication, business, industry, architecture, and engineering. There is general agreement that computer technology will probably be one of the greatest advances made in this period of time. However, though the past period of time might be characterized as the "era of physics and electronics," there is some indication that future years may be the "era of biology"; "...of imposing changes in and around the living cell, thus possibly changing the character and quality of life itself (6: 268)."

> ...In the next thirty-three years...we are likely to see great changes growing out of the new bio-medical engineering, the computer, and, possibly, weather modification ...organ transplant, genetic modification, and control of disease promises a substantial increase in human longevity (2: 642).

Naturally, concern exists over the effect these advancements in knowledge and technology might have upon the interpersonal relations of people, and parallel sociological effects on the general population:

> Technology is not simply a "machine," but a systematic, disciplined approach to objectives, using a calculus of precision and measurement and a concept of systems that are quite at variance with traditional and customary religious, aesthetic, and intuitive modes (2: 643).

> Our capacities for and commitment to economic development and control over our external and internal environment and concomitant systematic, technological innovation, application, and diffusion, of these capacities of our culture and institutions to adapt to so much change in so comparatively short a time may be a major question... (4: 116).

Concern about the ability to adapt to changes resulting from knowledge and technology might have implications for schools in reference to preparing the public for change. One source listed 100 technical innovations likely to occur before the year 2000. The following list appears to be related to representative changes which might directly affect education (2: 171-175):

--new or improved super-performance fabrics (papers, fibers, plastics)
--new or improved materials for equipment and appliances...
--new airborne vehicles...
--major reduction in hereditary and congential defects
--new techniques in adult education
--more sophisticated architectural engineering...
--three-dimensional photography, illustrations, movies, and television
--automated or more mechanized housekeeping and home maintenance
--widespread use of nuclear reactors for power
--general use of automation and cybernation in management and production
--extensive and intensive centralization (or automatic interconnection) of current and past personal and business information in high speed data processors
--practical use of direct electronic communication with and stimulation of the brain
--new techniques in the education of children
--general and substantial increases in life expectancy, post-

ponement of aging, and limited rejuvenation
--extensive use of robots and machines "slaved" to humans
--chemical methods for improved memory and learning
--new and improved materials and equipment for buildings and interiors...
--improved chemical control of some mental illness and some aspects of senility
--mechanical and chemical methods for improving human analytical ability more or less directly
--simple, inexpensive video recording and playing
--inexpensive high-capacity, world-wide, regional, and local... communic-tion...
--practical home and business use of "wired" video communications for both telephone and television...
--shared-time (public and interconnected) computers generally available to home and business on a metered basis
--inexpensive (less than $20), long-lasting, very small, battery-operated television receivers
--home computers to "run" the household and communicate with outside world
--maintenance-free, long-life electronic and other equipment
--home education via video and computerized and programmed learning
--conference television (both closed-circuit and public communication systems)
--new methods of teaching language rapidly

The technologists appear to turn to the computer as the trend of the future. The computer is envisioned as having a tremendous effect upon all future phases of social, economic, and educational endeavors.

> ...computer is an extension of the human mind (as)... an automobile is an extension of the human body...automobile left practically no human institution unchanged as a result of the increase in human mobility...impact of the computer is likely to be just as great...an extension of the human nervous system... (6: 209).

> The impact of the computer...probably see a national information-computer-utility system, with...terminals in homes and offices...central computers providing library and information services, retail ordering and billing...(2: 642).

Closely related to the computer impact will be the continuing knowledge explosion. This has already affected present preparation programs in colleges and universities, and curricular programs in the schools. The knowledge explosion needs to be carefully reviewed as the future is anticipated. It may materially change traditional educational processes and curricular content in the educational experience.

> The knowledge explosion...more emphasis will probably be placed on storage and retrieval facilities...mastery of knowledge sources may well become an imperative educational goal... (12: 18).

New concepts of information storage and retrieval must be institutionalized. A concurrent implication for education might be a stress on process, rather than more content. Using a process, a learner would have access to huge amounts of relevant data, and an enabling capability to utilize this data.

There will be successes and failures in the development of projected technological devices, and it is possible a plateau of increased scientific and technical knowledge in certain areas will be reached. It appears that society is on the threshold of an ever-expanding program of knowledge development and possesses material means to make this knowledge available for mankind's benefit. Dissemination of this data and information with the diffusion of knowledge and educational opportunities throughout the world might have a substantial effect upon many future developments in the United States and the world. Advances in instant communications and telecommunication as well as improved transportation resulting in increased population mobility may make possible benefits to the entire society. The rapid increases in both the knowledge explosion and the development of technological devices makes it imperative to review preparation programs at all levels--elementary through college--to: 1) prepare future citizens to handle change; 2) be able to use new devices to assist the learning process; and 3) to share data evaluating the directions society seems to be following. One apparent need for the future would be an organized effort to synthesize developments in knowledge and technology into an organized body of knowledge and materials so interrelationships could be seen, and ultimately transmitted to those who could make maximum use of them. Tremendous advancements in all of these fields of knowledge and technology has made it difficult for individuals to keep up with trends in their own and related fields.

Educational Projections

In dealing with educational projections, it was necessary for a selective factor to be operating. The broad range of "education" was narrowed to include material most pertinent to the project--the future direction of elementary education and childhood education in the United States. Even so, the direct implication and effects of all factors in education (preschool through college and teacher education preparation) have their effects upon the elementary school educational program. This makes it extremely difficult to erect definite boundaries between certain information and its effects upon projecting it to the future.

As in the societal projections, an attempt has been made to define

broad, guideline trends appearing to have an effect upon future education. Alternatives society and professional educators consider will determine the direction education will follow during the next decade. Even though the facts and materials of specific projections may vary within any of the designated areas, it is believed that the generalized trend of these questions and alternatives will be pertinent to future developments in education.

It is obviously true that many factors and forces may be unleashed which might materially affect these projections. Some have already been stated. Additionally, the end of the Vietnam War might result in the release of large amounts of federal funds into education. This would have a vital impact upon the direction of American education.

Increased federal funding may raise some questions about current financing programs at local and state levels, and the general organization of education in the United States. The advancements in educational technology and the mass production of media materials and appliances may make it possible for instructional methodology to be materially altered within the near future. It should be kept in mind, however, that leading writers and authorities in the field are concerned that current and past innovations have not penetrated seriously into the core of teachers and administrators in public education today.

Educators are concerned that America is not able (or not willing) to define the educational goals and objectives for our school system. There seems to be a continuing conflict between various segments of society, and within the profession itself, as to the proper goals of our educational program. This is currently visible in colleges and universities, especially as pertaining to teacher education programs. Considerable attention and agreement needs to be developed to direct the best efforts and talents of the profession in a concerted effort to improve the educational process. However, the logistics of such an undertaking would be extremely difficult.

A bright horizon seems to be forecast for the future of education, but decisions made within the next two decades will materially affect the directions of program development.

Educational Population Growth

There seems to be little doubt that school populations will show continued growth over the next decade. These projections are related to the same types of factors as the society projections. However, varying rates of population growth at different age levels may affect the educational scene in different ways. The potential biological-medical ability to preserve life at both ends of one's life span suggests that education may have to be provided larger scales at both the preschool level and senior citizen level. The tremendous educational population increases of the last 10 to 15 years which pressured America's schools are currently emerging in post-high school levels. Enrollment increases

in those institutions over the next decade will be a direct effect.

It would appear that the elementary school enrollment (not considering early childhood education at this time) might be slightly lessened. This may provide time to consider alternative means to implement educational innovations in the elementary schools without the conflicting problems of simply finding the space, teachers, and facilities to provide an educational program. However, there might only be a short moratorium on the enrollment pressure. The large number of births in the late 40's and 50's have now progressed through elementary and secondary schools into young adulthood. Many variables must be considered in predicting enrollment in elementary education. These include: the trend to early marriages, earlier child rearing, changing social mores, and the increasing number of potential parents.

> During the sixties and seventies, the pressure on the grade schools will sharply decrease. Between 1965 and 1980, enrollment may increase by over 4 million or by only 12 percent. This is approximately an average of one percent per annum, an easily managed rate. The major problems, therefore will not be those of rapidly achieving net increases in total quantities of facilities and personnel. Rather, emphasis will be upon the relocation, improvement and replacement of physical facility, upon the improvement of personnel and upon the innovation and development of materials and techniques (6: 52).

> One consequence of the latter (the rapid rise in birth rate following World War II which has brought a relatively large college age and child bearing age group*) is that, even though the fertility level may decline, the number of births will increase and remain at a relatively high level during 1970 and 1980 (6: 52).
> *Added to quotation for clarification

> Between 1965 and 1980... The major uncertainty for the group 5 to 13 years of age...is, of course, the birth rate during the years 1966 to 1975. The projections assume a moderate decline from the 1962-65 level... Current birth rates are already well below the highs of the late fifties... On the conservative basis of projections used here, an increase of only 4 million or about 11 percent may be expected in the group 5 to 13 years of age. Such an increase is in sharp contrast to the increase of 61 percent or 13.5 million children in the preceding 15-year period (6: 50).

Teacher shortages will become more pronounced during the next decade. Manpower needs of the general society will drain off much of the teaching staff to other enterprises. The expansion of educational programs will also create the need for more teachers, as well as for teachers more highly trained in specialized fields. The inevitable result will be

critical shortages in teacher supply (7; 243).

This indicates possible relief for certain areas, but is simply a shift of problems to other locales. Evidence indicates that by 1980 the population will have increased mostly in the urban centers. This raises questions of adequate living conditions, services and educational programs. As indicated earlier, it appears that the development of the metropolitan centers and megalopolises will have a direct bearing upon the organization of governmental units and the ability to provide social and educational services by these units.

> Projections to 1980 for all metropolitan areas of the United States, based upon a continuation of past trends, show an increase of about 45 million in the metropolitan population between 1965 and 1980... Such an increase would represent a number equal to about 95 percent of the projected increase of 47.3 million in total population, and would result in more than 70 percent of the population being in metropolitan areas in 1980 (6: 37).

> By 1980, between 75 and 80 percent of our population may live in urban territory...as many persons...as there are in the entire United States today... (6: 41).

> At present about 140 million Americans, out of a total of 200 million, are classed as urban dwellers. By 2000 at least 280 million, out of a total population of about 340 million, are expected to be living in urban areas (2: 789).

> By 1980, of some 170 million people in metropolitan areas, about 100 million are projected to be in suburbs, about 70 million in central cities (6: 37).

This reference to metropolitan areas and central cities has direct implications to present poverty programs, programs for the disadvantaged, and the minority groups themselves who tend to occupy central city areas. Directly related to this would be decreases in rural areas. "By 1980, the farm population is likely to be fewer than 10 million persons (6: 41)." This changing relationship between urban and rural population will have a direct relationship upon organizational structures, the financing of education, and the traditional school calendar.

A trend toward early childhood education as an addition to the American public school system (see Childhood Education section of Educational Projections) has already started. Increased numbers of working mothers, culturally deprived children of minority groups, and other underprivileged children from both rural and central city areas demonstrate the need for increased programs of early childhood education. However, the majority of these programs will occur in urban settings and add to the relocation of population and financing problems for

education.

> ...enrollment rates for our 6-year old children are not far behind. (by 1960--99.5 percent of the 7-13 year old population enrolled in school*) When enrollment in kindergarten is included, they are now over 98 percent... Even more than two-thirds of our 5-year olds are now enrolled, after a dramatic rise since 1940 when the rate of roughly 18 percent differed little from that of 1910 (6: 51).
> *Added to quotation for clarification

This refers primarily to kindergarten enrollment of the 5 and 6 year olds, and does not accurately reflect the potential increase related to educational needs of 2, 3, and 4 year olds.

Another factor, though not directly related to the elementary level at this time, will be attempts to increase secondary school retention. Information on multiple-vocations of the future and the influence of increased leisure time have relationships to secondary and post-secondary school educational programs. This suggests a continuing education program for all ages of citizens. Addition of this goal for American education would certainly have effects upon the public's ability to support and increase programs of operation at all levels of education.

> Educational attainment levels will continue to rise so that, by 1980, the "average" adult 25 years of age and over will have received more than a high school education. By 1980, close to 60 percent of the persons 25 years of age and over will be high school graduates; about 13 percent of those 25 years of age and over, college graduates (6: 55).

Educational Goals and Objectives

It is not the purpose of this paper, nor was it the purpose of consulted sources to state what the educational goals and objectives should be. Various sources indicated there are rising movements to develop broad guidelines for American education, and to develop national and regional organizations to study, define, and implement these goals. Contained in the writing is a consistent thread indicating an awareness of a need to devise educational programs emphasizing the ability of the individual to develop individualized program needs, and the desire and ability to exist in the future changing society. Within this broad framework, however, there are vast differences between sources on the means for implementation. Some see this as an outgrowth of a technological system making it possible to "feed" the necessary, society-approved material to the students in some type of rote-mechanical approach; others see the development of an individualized instructional program to allow the student individual definition of his own program, and to select his own pace to meet the needs he defines as necessary

for his development as a citizen in this society. There is little question that there is an underlying feeling of concern on the part of many educators of a potential philosophical dispute between the technological and the humanistic approach to education.

The concern over current school programs and the desire for improvement for the future may be illustrated as follows:

> ...Common expectation and demonstrated function of our schools are to cover specific tasks and materials that have been predetermined for specific grades and periods of time ...denies individual differences in learning... (7: 49-50).
>
> Education should develop man's capacity for intellectual growth; students should be concerned primarily with posing problems and analyzing data... (5: 26).
>
> ...greater emphasis upon the so-called humanistic curriculum...purpose of education is the fullest practicable development of the individual, and this can only take place when he is valued by those who would educate him...try to stimulate and aid the development of each student's self-image...to build intrinsic motivation for learning (9: 26).
>
> An educational program that emphasizes values, goals, and the need for planning can obviously prepare students to meet the exigencies of the future (5: 27).

Some areas concerned with the establishment and determination of objectives and directions for American education are indicated in the following:

> ...rising pressure...not only to improve the quality of instruction but also to assume new and urgent social responsibilities...to expand or improve their physical facilities, ...continuing shifts of population into urban and suburban areas place large demands on facilities, equipment, and teaching staffs...considerable expansion of preschooling... to replace maturing population of teachers, and fill new teaching positions opened up by preschooling, compensatory education, and greater individualization of instruction (1: 27).

What will be the direction of the comprehensive high school and its effect upon changes in program related to the elementary school program? Indications are that some content and certain skill educations will move outside of the school; e.g., the development of vocationally-oriented training programs by business and industry and the development of home learning centers through educational technology, or the development of educational resource centers for continuing education. This suggests that "...schools of the future will not be vertical in struc-

ture; but...horizontal...(academic) schools...art schools,..physical training schools... (5: 45)." The decisions to be reached regarding educational objectives will pose many problems that need to be decided at all levels of the educational organization.

Change in Educational Administration and Organization

In examining the potential development of the educational system of the United States in the decades ahead, there seems to be consistent agreement that present organizational structures and administrative patterns must be reviewed. The concept of local control of education has been a dominant influence on the conception of the democratic system in the United States. Few people wish to see this concept of local initiative and concern eliminated from society, but it becomes increasingly difficult to conceptualize how the curricular advances and needed financial structures to administer these advances can take place on a unified front when there is no organization or control at other than the local communities. This is not a problem limited to education along, but is being reviewed in social areas relating to other governmental units as well. The answer determined in this area may have a serious effect upon the possibility of unified and directed changes being brought about in the future.

Obviously there are a number of people in the United States who would challenge the concept of changing the local administration and control of public education. They feel strongly that the close attention paid to their own schools and the localized financing of those schools preserve the types of objectives, values, and attitudes they would like to see developed in the public school system. Others, seeking a more unified program, identify the problem of local control of education as creating a shifting policy with too heavy an emphasis upon local initiative and control, and inability to provide for expanding programs.

> American public education is administered by community officials under constant pressure from local, political, and social forces. ...of all the institutions in American life it is one which is among the most yielding to the demands for change thrust upon it by the changing requirements of the society at large and the other institutions and social subsystems to which it is functionally and structurally related (5: 16).

> Attendance units will have to be preserved, but administrative units, to assure equity in the educational opportunities of children, must be enlarged... In addition to the larger administrative unit for the schools, it is inevitable that the state and federal governments play more extensive roles in the management and direction of local education... no state or locality has the ability to raise money equal

> to the federal government...involve greater concentration of power in a central government...it is inevitable that it deal through an administrative intermediary...most obviously the state departments of education...greater involvement of the federal and state levels of education... for the solution of our most pressing social problems. Some of these problems have become so vast...they can no longer be solved within the geographical limitations of the area (7: 238-241).
>
> The need for research, development, and innovation ...a small fraction of 1 percent of the total investment in education...electrical and communications equipment industry in 1966 totaled 3.4 percent of net sales...IBM... about 5 percent... The missing link in education is developmental research as it is practiced in industry... Of industry's total research and development funds, 4.2 percent are expended on basic research, while applied research accounts for 18.8 percent and development for 77 percent (1: 29-30).

Other components of the change process, e.g., disseminating, diffusing, and implementing educational innovations must be supported.

There appears to be consistent feeling that the demands of education for the future, and the effects of the implementation of educational technology and specialized media programs will require changing of the local structure of organization. Financing the program demands will be a major determinent.

> ...local school district structure is in need of prompt and sharp revision--in function, in scope of programmatic control, in authority relations to other units of execution, in methods of operation and governance, in geographic definition, and in the roles expected of it in financing schools and in purchasing school services (7: 25).
>
> ...applications of technology...computer-assisted instruction...to devise, refine, execute, and constantly modify...requires a mammother dedication of talent and energy, and its installation necessitates capital investment and operational support in great magnitude...which will transcend the traditional local school district... urbanism, for example, does not fit the largely accidental and historic geographic boundaries... (7: 24-25).

Considerable attention and thought has been given recently to the role of the State Department of Education in the changing perspectives of education. There appears to be some feeling that this unit may become a central controlling or coordinating agency in the educational administration patterns of the future. Studies and articles in recent years indicate a need for the strengthening of state departments if

this is to be a reality. The development of regional centers poses a serious question to state departments of education, and raises additional questions relative to geographical boundaries that apply to local districts. Some areas within states are more closely allied by both location and interests to areas of neighboring states. These interstate relationships could be fostered by regional development, and the decision between increased state structure and/or regional programs for the future will be one of the many decisions which will need to be made.

> ...and, what of the state departments of education in the stream of impending social change? ...the state-level structure for executing public education apparently faces decisive retooling. The choice is still open as to whether it will, or can, be effectively and meaningfully restructured--or will face a declining significance (7: 27).

> ...must enter upon a period of unprecedented expansion ...research...development...provision of technical adequacy and expertise in education...supplementary, ancillar, and specialized service projects--another example of the move toward a different kind of unit. Seldom do the "new" units have much kinship with "intermediate units"... (7: 28).

> In the future we shall have to use many additional entrepreneurs, such as the state departments of education, multidistrict service centers, major specialized production enterprises and repositories of technical expertise, interchange arrangements for personnel and equipment and concentrations of evaluation and planning services. This means that local districts may receive directly much smaller proportions of the state-fund dollars, and thus a new rationale for allocation of state funds is almost mandated (7: 27).

There is some feeling that the problems currently facing education and society require even a broader-based approach than state or regional efforts. The attack upon poverty, the problems created by a transitory population, and the development of national relationships through mass media communication create a question of whether a larger, more unified planning and financial structure to attack problems should be developed.

> Nationalism--and to a large extent internationalism--...powerful influence in shaping the response of public schooling to present and impending social change... (7: 25).

The decisions that are made in changing the administrative and organizational structures of education must assist changes in the next decade, not hinder them. Regardless of whether or not changes are made, it is obvious that cooperative programs among administrative and organizational units are necessary to promote the necessary and desirable changes in education.

> ...Rapid advance in educational research, development, and actual instructional innovation will be impossible until a pattern of order and effective cooperation is established among school districts, state school officials, universities, and federal funding agencies...strengthening the state offices of education to enable them to provide more effective leadership. ...need for more adequate national perspectives on educational problems and more decisive national action in the improvement of education...expansion of government and private financing of research in all phases of educational theory, practice, and evaluation...partnerships among various levels of government and among the districts and states... share information, cooperate in research, development, and evaluation, and support the joint establishment of demonstration and pilot projects too large for single districts or states...industry to play an increasingly important role (1: 30-31).

Many areas related to administrative and organizational structure need to be questioned and resolved if prospective changes in education are going to occur on unified fronts over the next several decades. Some of them deal with the questions raised above, but others deal with a basic question of whether the public school will remain as an agency of society, or be replaced by community, industry, or home-supported programs. This question will materially affect the structure of education as currently known (11):

--are there adequate capabilities at local and state levels for long-range educational planning
--how can existing local educational organizations be made compatible with future, non-localized capabilities of electronic technology
--how will funds be obtained for new programs in accelerated learning, drug research and use, development of CAI, creation of computerized libraries and data retrieval systems
--how can the traditional local administration of education be adapted to the future potential mobility of learners
--what effect will industry-sponsored educational programs have on formal degree and certification programs in public and private education
--if education is conducted by a wide range of instructions, not directly controlled by professional education, how can the results be monitored, measured, evaluated, and changed
--is the concept of the school as an autonomous unit in society outmoded? If so, what should replace it?

Changes in School Organization, Methodology, and Curricular Patterns

It is increasingly difficult to draw a line between an organizational pattern, a teaching methodology, and a curriculum program. In

order that discovery and inquiry methods may be carried out to their most satisfactory conclusion, a school must be organized, its staff must function, and its materials must be arranged in such a way that the instructional program can operate. Thus the dividing line between organization, administration, curriculum, and methodology is harder to draw within the new organizational patterns. There seems to be little doubt that the over-all trends in elementary school organization and curriculum patterns are for non-graded, team teaching, individualized instruction, and utilizing computers and educational technology as a means of developing programs through which students make individual choices as they proceed through programs essentially diagnosed and prescribed with them in mind. This is a broad-ranging generalization, and is not universally true of school programs today. However, this appears to be the trend for the future.

> There should be greater independence on the part of each learner in building his own program...trend of the items and the challenge of the future demand that students have opportunity to build programs calculated to meet their own needs. ...concurrently, there will be an increase in diagnostic and counseling activities (9: 26).

There will be a variety of organizational structures used within the school program, but it would appear that the next few years will provide an opportunity for elementary education to review recent developments in many fields and to place its emphasis upon improving the implementation of procedures, i.e., utilization of developments. This, with the addition of the early childhood education programs, would appear to be the major organizational decisions to be decided in the next decade.

> ...the major problems...will not be those of rapidly achieving net increases in total quantities of facilities and personnel. Rather, emphasis will be upon the relocation, improvement and replacement of physical facilities, upon the improvement of personnel and upon the innovation and development of materials and techniques (6: 52).

> ...early childhood education, a phase which probably will be an organized part of formal schooling by 1980...the early childhood program simply has to be non-graded... Increasing maturity involves broadening the range of exposure to more peers and more adults and so team teaching is essential to providing this experience...lower elementary beginning at 5 or 6 years of age, and concluding at 7, 8, or 9 years...function is to teach reading and other fundamental learning skills and to do it thoroughly. ...need diagnosis of the individual and a prescription drawn from a repertoire of techniques...need differentiated methods, periods of time, and grouping procedures based on analysis of need rather than achievement...get into the curriculum

the problems likely to be facing young adults in 1980... population, poverty, pollution, and many more (7: 57).

These organizational developments blend into curriculum and teaching pattern responses of the instructional staff making it possible for a program to be built to meet individual student needs. The bringing together of the administrative organization and the instructional methodology with educational technology and media will spell out changes in teachers' roles. Teachers, prospective and active, must be prepared to cope with new methodology and educational media. In addition the accumulation of knowledge, skills, and the implementation of differentiated staff assignments will spell out a differentiated role assignment for the classroom teacher. Movement toward team teaching, nongrading, and individualizing instruction means that teachers will need to review their competencies, and ultimately to concentrate in areas where they will most likely succeed in the educational process with children.

> ...reconstruction of the instructional staffs, instructional patterns, and school organizations...team teaching, differentiated teaching functions, and more flexible salary scales...instructional television and various types of audiovisual equipment...improved teacher education...improving curriculum materials...early schooling...establishment of both public and private nursery schools, especially in the neighborhoods of the disadvantaged...eliminate the regimentation of students...differentiated staffs, team teaching, and variable student grouping together with the use of instructional television and other audiovisual media has much promise for individualizing instruction (1: 14-16).

> ...the role of the teacher, too, must change... The well-prepared teacher will be used as the director of a team, and less well-prepared individuals as assistants in special types of activities performed under the leadership of the master teacher. ...will spend no more than half of school day in the classroom, and the remaining time will be devoted to the development of instructional materials, the formulation of lesson plans with associates, the coordination of the activities of the other members of the instructional team, and participation in curriculum development activities (7: 43-44).

> The present role of the teacher will gradually evolve into a cluster of roles...as a team leader, formulator of detailed objectives, instructional sequence planner, script writer, presenter of information, evaluator of pupil responses, and designer of supplementary pupil experiences... (7: 227).

> By 1980, an enormous expansion in sub-professional or para-professional full-time and part-time workers...general aides...instructional machine operators, playground supervisors, information room clerks, data assistants, equipment maintenance technicians, travel aides, and so on (7: 227).
>
> ...Perhaps a third of the coordinating teacher's six-hour working day may be spent supervising student learning of content in existent disciplines and interdisciplines. Another third may be spent with various staff members in coordinating and planning...final third may represent his specialization in education...individual therapy...analysis groups for discussion with students...preparing television presentations and tapes...programming computers...developing evaluation techniques... (12: 27).

Regardless of organizational patterns and role definitions and differentiations that may be built for teachers, it is stressed that there is a need for a change in the methodology of instruction within the classroom. The organizational patterns, the addition of aides, and differentiated staffing approaches will only be as effective as the actual changes brought about in the teaching-learning process itself. To be effective, any methodology must be supportive of clearly defined learner objectives.

> New patterns of organizing classes and personnel are designed to widen the range of educational expectancy of an age group; eliminate the stops and starts of pupil non-promotion practices; encourage attention to individual differences; break down monolithic concepts of class size; encourage flexible grouping; and broaden the range of in-instructional personnel brought into the schools (7: 54).
>
> Individualization of instruction...requires more than knowing something to teach and having a practical grasp of good teaching methods. ...requires a knowledge of the learner--his background, motives, interests, perspectives, and attitudes, his hopes and aspirations or his hopelessness and lack of aspiration (1: 38-39).
>
> Implications for instruction...increasing amounts of student participation and activity should take place... should be increased emphasis upon the discovery method and similar techniques...more individualization of instruction ... Increased use should be made of teaching aids... Teachers must re-examine their own teaching styles...place increasing emphasis on noncognitive learnings...more concern --and more effort--to help students develop a strong and constructive self-image (9: 28-32).

As indicated earlier, recent innovations in education have not yet reached all teachers. It will be necessary for a long-range, intensive program of teacher preparation and inservice education of current teachers to prepare them to properly use new methodologies and materials.

> ...Continuing process involving inservice programs... refresher courses...know far too little about human motivation and behavior or of social-cultural forces which affect the individual (1: 51).

> ...nothing short of a complete overhaul will bring our teacher education programs, both preservice and inservice, the vitality they must have if teachers are to effect the rapid educational evolution we want (7: 51).

> The difficulty involved in shifting the sense of security of teachers from what they "know" to what they can "do" is deep-seated. Perhaps more progress has been made in doing this in elementary schools than in high schools. Techniques like individualized instruction, grouping within classrooms, student-teacher planning, and student-led and initiated discussions are difficult for those who have not been trained in them and who do not receive insightful and understanding help (9: 15).

Not only will it be necessary for the teacher to be better advised and prepared in the materials, methodology, and technology of the new education, but there will need to be a change in objectives of the student and the classroom teacher. It appears from the literature that there will be an increased emphasis upon placing the responsibility for education on the child. This involves the development of values and attitudes which will provide for an opportunity for the student to develop the capabilities to live in a changing society.

> The role of the teacher in an inquiry-centered environment...a creative manager who provides...activities or offers counsel that encourages students to investigate problems, ...adoption of such scientific attitudes as rationality, suspended judgment, honesty, critical-mindedness and open-mindedness... (5: 30).

> ...emphasis upon problem-solving, upon learning how to meet new situations, upon the skills of observation, analysis and communication, and upon the development of attitudes appropriate to change (7: 36).

This emphasis on the student developing individual, personalized patterns of learning and participating in a critical, self-inquiry process of learning will require a searching look at the curriculum programs of the public schools. The emphasis upon content and assigned

bodies of information at certain grade levels will need to be reviewed if this process of an individualized program of education is to be fully implemented.

> We have not asked ourselves the question as to whether or not a separate-discipline approach is equally appropriate at all levels of education. Nor have we seriously considered the possibility of organizing parts of the curriculum around present problems of young people or pressing problems of mankind (7: 53).

> The curriculum should be based more upon process and less upon content...does not suggest that the subject-matter basis for curricular structure will be abandoned... What is suggested is that important processes must be given a conscious focus and place in educational programs--process such as problem-solving, discovery, experimentation, evaluation (9: 21).

> Flexibility should be built into the educative process for all students...no longer any sense in memorizing subject matter that computers can efficiently process...more important to be able to ask questions...computers can complement the educative process by freeing teachers from rote exercises and...students from...memorization tasks. ...It does not, follow, however, that factual information has no role in school. Information...(aids) in the formulation of questions and in the ultimate evaluation of alternative solutions... information is not an end in itself (and this is the essential difference with the past); it is a tool that develops a capacity to inquire, to criticize, and to evaluate (5: 26).

If educational programs are to be individualized or personalized, mechanisms must be developed to support this mode of education.

> Both teachers and schools should have greater flexibility in curricular planning... Many curriculum writers have recommended that individual schools should have greater control over their own curriculum...teachers who use subject-matter as a springboard for students to do critical thinking, problem-solving, research, and the like, will have great latitude in selecting the topics they use (9: 25).

New approaches to the instructional process will place more reliance upon the individual for his education. This has many implications for future developments in the area of educational technology and research related to motivation in learning. Though the emphasis will be on the knowledge explosion and the ability to use various technological developments will have many implications on group processes and relationships of individuals at work in all areas of society. This area of motivation and adaptation to group interrelationships will be one area

needing attention in the future.

> ...human mind has a limited capacity for acquiring and storing information. ...limit to the magnitude and complexity of any cognitive system that man can internalize. ...If society becomes more complex, the amount of knowledge a child must acquire...increases. ...We may already be nearing some kind of limit for many of the less gifted among us, and those still able to handle the present level of complexity are in ever increasing demand. ...if that capacity is limited... even our most intelligent citizens will have to rely increasingly on artificial aids...digests, libraries, computers, special displays, and communication devices... (2: 886-887).

> ...even most intelligent men will have to work increasingly in teams; no single member of any team would be competent to understand all aspects of the shared problem. ... teams are assembled as needed and dissolved...; their transitory character threatens something of a revolution in managerial practices. ...motivational implications...dominant personal goal of the individual is "success"; ...an expert collaborator finds satisfaction in doing his job well, and in the sense of affiliation and shared accomplishment...may not be sufficient... What alternative rewards can society provide to keep an anonymous genius hard at work (2: 887-889).

> ...increased number of students, the increased knowledge to be communicated, and the increased duration of the educational experience...essential ingredient in motivational pattern of good student is... "need achievement." ...desire to do better, to compete against a standard. ...one of the most persuasive answers to this motivational question is that more initiative should be placed in the hands of the learner (2: 889-891).

> Instructional materials... The most promising materials are those which are designed to be responsive to the exploration of the student; enable the student to be self-propelling; extend the range of stimuli to several senses; provide alternative means to common ends; and free the teacher from burdens of routine correcting and testing...bringing to the student a system of media and materials not requiring extensive mediation by the teacher (7: 54-55).

A key problem related to individualizing instructional programs is the ability to assess and evaluate a student's position with reference to: 1) the teaching-learning process; 2) the knowledge base from which he operates; and 3) the attainment of the developed goals and standards. Education has not developed the types of evaluative tools needed for this task. Little progress has been made on the reliable measurement of attitudes, interests, and personality. Attaining an individualized,

self-directed, self-initiated program of instruction would require the ability to assess and evaluate the student in terms of criteria which have not been developed. Solving this evaluative problem will be a crucial issue faced in the next developmental period.

> ...need for reliable assessments of quality of instruction...techniques for measuring individual potentials. ... his power of imagination, his artistic sensitivities, or his capacity to make intelligent decisions (1: 30).

> Schools should provide teachers with help in their evaluation procedures. ...Teachers may well be less adequately prepared in the area of measurement and evaluation than in any other aspect of the teaching task...schools should employ individuals who are equally knowledgeable in the techniques of measurement and appraisal, and the problems of the classroom...to help teachers plan and execute evaluation activities, and develop and improve instruments (9: 37).

A related question is: How to design and develop assessment and evaluation material to be used by students in self-motivation and self-initiated learning while at the same time utilizing this information for record purposes to evaluate both students and programs?

> Each student not only tests himself, but is tested in terms of how much he knows and how well he performs in terms of what he knows...successes and failures are fed back into research and development centers for the benefit of the learning center, and to the individual... (7: 19).

> ...need for extensive research, experiment, and evaluation in educational technology...requires well-financed and expertly staffed centers that have effective working relations with experimental schools and teacher education institutions (1: 47).

Some long-range questions to consider are (11):

--how can educators design and develop automated processing and maintenance of student records for both formal and informal learning experiences?
--how can evaluation criteria for student progress in non-formal learning situations and programs be developed?
--what are the unanticipated consequences of allowing each learner to progress at his own rate through educational programs?
--should curricula be built around social issues and problems or around traditional disciplines and specialists?
--in light of the rapid obsolescence of subject content, how shall educational systems be designed to remain current?

--how to develop curricula and educational programs for special schools
--how will new requirements for long range planning affect types of personnel employed in education? career ladders? salary schedules? training programs? credential requirements?
--should education develop its own in-house capabilities for computerized systems development or continue to rely on external organizations?
--should educators seek an active liaison with private companies interested in entering the education market for profit?

It should be recognized that efforts are being made to improve certain aspects of the instructional program at this time. Various experimental schools, laboratory schools connected with universities and colleges, and public and private school district programs are implementing one or more of the new methodologies. It would be hoped that a coordinated effort could be made to utilize the results and findings from these programs. One such program developed to meet a need to select, try out, and evaluate promising new learning methods and materials is being started. A functioning model of an educational system for the Seventies is being initiated by the American Institutes for Research in the Behavioral Sciences (AIR), the Westinghouse Learning Corporation, and 14 cooperating school systems. This developed from out of the findings of Project TALENT (3: 27).

A coalition of educational institutions in the State of Oregon is currently designing and carrying out performance based, field-centered, and personalized instructional programs for preschool and elementary education (Hoover Elementary School - Corvallis, Oregon); secondary education (Adams High School - Portland, Oregon); and professional higher education (Oregon College of Education - Monmouth, Oregon). Each of these efforts are currently supported by on-going research, development, and implementation capabilities at the Teaching Research Division of the Oregon State System of Higher Education.

How Will Developments in Educational Technology, Media, Materials Affect Education

The advancements in educational technology and media during the past 10 to 15 years has had a tremendous effect upon the educational programs. This has resulted in changes of organizational patterns, curricular materials, and also permitted the development of instructional methodologies dependent upon developments. Mass production and development will make them readily available to all schools providing costs can be reduced. The application of technology and media however, has not been proven to change instructional methodology unless accompanied by intensive programs of inservice preparation to familiarize teachers with technology-media and to make it as readily available and usable as the traditional lecture-discussion methodology. Currently, heavy reli-

ance is placed upon the "outside expert" to develop and utilize the esoteric equipment and machinery in highly experimental programs. It would appear that we can anticipate educational technology and media bringing about changes in methodology in direct relation to the provision of this material and equipment on a large, inexpensive scale, and a concurrent development of skills and talents of staff members to utilize them.

> The simple point is that a complex society is not changed by a flick of the wrist. Considered from the viewpoint of gadgetry, the United States in the year 2000 will be more like the United States in the year 1967 than different (2: 641).

> Many writers heralding initial efforts to develop a new educational program for the future call the public's attention to computer-assisted instruction, which, although prohibitively expensive at present, might be brought into the reach of all at some time in the future (3: 27).

Realistically, and at the present time, only large, well-financed school districts can afford the costs of providing Computer Assisted Instruction to a significant number of students.

> A new system of education, designed to be installed in the relatively near future, must be sufficiently flexible to be used by present teachers, in present classrooms, in available school buildings. The principal addition to the present facilities in each school building is a computer input-output terminal in direct communication with a computer (3: 29).

> Because they are salable, technological innovations will be strongly endorsed... We can expect that advertising and technology will lead to rather massive efforts to "individualize" the schools, using programmed learning, teaching machines, and computer process... Lest we forget, in the 1930's educators tried to "sell" a "humanized" concept of individualization of instruction... There were few, if any, gadgets to sell. Taxpayers at that time, refused to invest as much in the human side of school enterprise as they will be called upon to invest in the mechanical (7: 237).

It should be further remembered that "...technology is not simply a "machine," but a systematic, disciplined approach to objectives... (2: 643)" thus having broader implications to the teaching-learning process than gadgetry to present materials.

1) Technology, also has three major implications for the teaching-learning process and for the preparation and roles of educators it frees teachers from their historic,

primary function of content management...the teacher will have time to focus on more valuable functions such as: a) diagnosing learner abilities and needs; b) creating an appropriate range of learning experiences; c) helping pupils learn how to learn; d) personalizing learning; e) fostering unique individual potentials; f) developing higher thought processes; g) maximizing the learner's desired motivations; and h) involving learners in creating knowledge, applying principles, exploring life styles, and valuing explicity...

2) Educators will need to master knowledge and the skills required for utilizing effectively the new technologies. Two areas of technology are immediately relevant to educators. The first area includes machine technology, such as machines for programmed learning and computers for managing individualized instruction. The second is a range of technologies needed in carrying out generic process functions which support pupil learning across instructional content areas. Two such skills are (1) creating and applying valid data gathering instruments to assess pupil norms which influence learning; and (2) analyzing matrices of pupil-teacher interreactions to serve as a base for conducting experiments in increasing the effectiveness of the teaching-learning process.
3) Technology should be applied in creating instructional systems that will enable educators to acquire the new knowledge and skills required to carry out the necessary functions of a radically transformed and improved system of education (8: 309-310).

Future Developments of Preschool and Childhood Education

There appears to be consistency in the predictions relative to preschool and childhood education. Recent studies and sociological developments indicate that the present kindergarten program, and growing programs for three and four year olds, will be added to the public school system of education in this country. This addition will not be, as it so often has been in the past, an appendage to the public school system, differing in its relationship to the total program; but will be an extension of the regular curriculum and organization. It would appear that the preschool and childhood education curriculum will also follow a developmental sequence emphasizing individualized instruction and non-graded organizational patterns. These will be directly related to the primary grades of the elementary school program, permitting the students to move within the non-graded framework as their capabilities and potentials can be assessed and developed. There is every indication that the program will contain team te-ching to permit extensive interactions between adults and children. Electronic and programmed material will be used, and the emphasis will be upon both the ability to develop skills and the ability to work together in groups without direct supervision.

> ...early childhood education, a phase which probably will be an organized part of formal schooling by 1980... the early childhood program simply has to be non-graded... Increasing maturity involves broadening the range of exposure to more peers and more adults and so team teaching is essential to providing this experience...lower elementary beginning at 5 or 6 years of age, and concluding at 7, 8, or 9 years... (7: 57).

> What is now considered preschool will become a basic component of America's "common school" ...not...primary grade activities moved down...school will concern itself with attitudes, values and commitment (7: 95-96).

> If efforts of the schools are to be fully effective (in teaching those with cultural deficiencies in their preschool and home environments*) the children from many if not all segments of our society must receive regular educational services covering the early preschool years from at least the age three (1: 34).
> *Added to quotation for clarification

The sociological issues dealing with poverty and increasing urbanization (particularly the underprivileged in the central city) would appear to have a continuing effect upon the development of preschool and childhood education programs. The increasing need for more than one member of the family to work to maintain a standard of living and the need for providing early environmental opportunities for children to experience educational opportunities will advance earlier schooling for children, particularly those of the disadvantaged.

> According to the 1965 U. S. Department of Labor statistics, about 20 percent of mothers of preschool children are working at least part time, twice the figure for 1950 ... One implication...young children will be placed in day care centers at increasingly early ages...plans are currently underway in New York and other major cities to establish "mini-schools" for two-year old children of low income mothers (5: 87).

> Education in the school with disadvantaged...needs to treat such symptoms of that spiral (of futility*) as (a) a deprecatory self-image, (b) cognitive deficiencies which have stemmed from limited environmental stimulation and experiences, and (c) ignorance of the learning-how-to-learn skill (7: 91).
> *Added to quotation for clarification

> ...adequate education along--without parallel gains in overcoming barriers to opportunity in employment, housing and political participation--will not, in and of itself, guarantee an end to the vicious cycle of poverty (7: 79).

...early childhood education in the years ahead will practice improved techniques for diagnosing and understanding the particular patterns of intellectual and cognitive abilities of specific children; better strategies for direct instruction for cognitive and language development; selection of content aimed at providing... "the proper match" between the child's developmental level and the materials and activities provided him; clear appreciation of the effects of environmental stimulation and their contributions to the learning environment; more knowing tactics for nurturing a child's healthy self-image; motivational development and abilities in "learning how to learn"; and smoother articulation with primary education... (7: 91).

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